

FORM PTO-1390 (REV. 5-93)		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	
TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371		ATTORNEY'S DOCKET NUMBER 10191/1707	
		U.S. APPLICATION NO. (If known, see 37 CFR 1.5) <div style="font-size: 2em; font-weight: bold; text-align: center;">09/744222</div>	
INTERNATIONAL APPLICATION NO. PCT/DE99/02221	INTERNATIONAL FILING DATE July 22, 1999 (22.07.99)	PRIORITY DATE CLAIMED: July 22, 1998 (22.07.98)	
TITLE OF INVENTION CONTROLLER FOR A PLURALITY OF ELECTRIC LOADS IN A MOTOR VEHICLE			
APPLICANT(S) FOR DO/EO/US Jens WEBER and Jens KIRCHER			
<p>Applicant(s) herewith submit to the United States Designated/Elected Office (DO/EO/US) the following items and other information.</p> <ol style="list-style-type: none"> 1. <input checked="" type="checkbox"/> This is a FIRST submission of items concerning a filing under 35 U.S.C. 371. 2. <input type="checkbox"/> This is a SECOND or SUBSEQUENT submission of items concerning a filing under 35 U.S.C. 371. 3. <input checked="" type="checkbox"/> This is an express request to begin national examination procedures (35 U.S.C. 371(f)) immediately rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1). 4. <input checked="" type="checkbox"/> A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date. 5. <input checked="" type="checkbox"/> A copy of the International Application as filed (35 U.S.C. 371(c)(2)) <ol style="list-style-type: none"> a. <input type="checkbox"/> is transmitted herewith (required only if not transmitted by the International Bureau). b. <input checked="" type="checkbox"/> has been transmitted by the International Bureau. c. <input type="checkbox"/> is not required, as the application was filed in the United States Receiving Office (RO/US) 6. <input checked="" type="checkbox"/> A translation of the International Application into English (35 U.S.C. 371(c)(2)). 7. <input checked="" type="checkbox"/> Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3)) <ol style="list-style-type: none"> a. <input type="checkbox"/> are transmitted herewith (required only if not transmitted by the International Bureau). b. <input type="checkbox"/> have been transmitted by the International Bureau. c. <input type="checkbox"/> have not been made; however, the time limit for making such amendments has NOT expired. d. <input checked="" type="checkbox"/> have not been made and will not be made. 8. <input type="checkbox"/> A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)). 9. <input checked="" type="checkbox"/> An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)) (unsigned). 10. <input checked="" type="checkbox"/> A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)). <p>Items 11. to 16. below concern other document(s) or information included:</p> <ol style="list-style-type: none"> 11. <input checked="" type="checkbox"/> An Information Disclosure Statement under 37 CFR 1.97 and 1.98. 12. <input type="checkbox"/> An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included. 13. <input checked="" type="checkbox"/> A FIRST preliminary amendment. 14. <input type="checkbox"/> A substitute specification. 15. <input type="checkbox"/> A change of power of attorney and/or address letter. 16. <input checked="" type="checkbox"/> Other items or information: International Search Report, Preliminary Examination Report and PCT/RO/101. 			

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U.S. APPLICATION 37 C.F.R.1.5

09/744222

INTERNATIONAL APPLICATION NO.
PCT/DE99/02221

ATTORNEY'S DOCKET NUMBER
10191/1707

17. ☒ The following fees are submitted:

Basic National Fee (37 CFR 1.492(a)(1)-(5)):

Search Report has been prepared by the EUROPEAN PATENT OFFICE or JPO \$860.00

International preliminary examination fee paid to USPTO (37 CFR 1.482) \$690.00

No international preliminary examination fee paid to USPTO (37 CFR 1.482) but international search fee paid to USPTO (37 CFR 1.445(a)(2)) \$710.00

Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO \$1,000.00

International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(2)-(4) \$100.00

CALCULATIONS | PTO USE ONLY

ENTER APPROPRIATE BASIC FEE AMOUNT = \$ 860

Surcharge of \$130.00 for furnishing the oath or declaration later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492(e)).

\$

Claims	Number Filed	Number Extra	Rate		
Total Claims	6 - 20 =	0	X \$18.00	\$	
Independent Claims	1 - 3 =	0	X \$80.00	\$ 0	
Multiple dependent claim(s) (if applicable)			+ \$270.00	\$	

TOTAL OF ABOVE CALCULATIONS = \$ 860

Reduction by 1/2 for filing by small entity, if applicable. Verified Small Entity statement must also be filed. (Note 37 CFR 1.9, 1.27, 1.28).

\$

SUBTOTAL = \$ 860

Processing fee of \$130.00 for furnishing the English translation later the ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492(f)).

+

\$

TOTAL NATIONAL FEE = \$ 860

Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property

+

\$

TOTAL FEES ENCLOSED = \$ 860

Amount to be:
refunded

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a. ☐ A check in the amount of \$ _____ to cover the above fees is enclosed.

b. ☒ Please charge my Deposit Account No. 11-0600 in the amount of **\$860.00** to cover the above fees. A duplicate copy of this sheet is enclosed.

c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 11-0600. A duplicate copy of this sheet is enclosed.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

By: Richard L. Mayer (Reg. No. 41,172)
Richard L. Mayer
SIGNATURE

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NAME

1/22/01
DATE

[10191/1707]

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s) : Jens WEBER et al.
 Serial No. : To Be Assigned
 Filed : Herewith
 For : CONTROLLER FOR A PLURALITY OF ELECTRIC
 LOADS IN A MOTOR VEHICLE
 Examiner : To Be Assigned
 Art Unit : To Be Assigned

Assistant Commissioner for Patents
 Washington, D.C. 20231

PRELIMINARY AMENDMENT

S I R:

Kindly amend the above-captioned application before examination, as
 set forth below.

IN THE SPECIFICATION:

Please amend the specification as follows:

On page 1, line 1, change "Technical Field" to
 --FIELD OF THE INVENTION--.

On page 1, line 3, delete "the field of".

On page 1, line 4, change "It" to --More particularly, the present
 invention--.

On page 1, line 7, change "Background Information" to
 --BACKGROUND INFORMATION--.

On page 1, line 9, change "Methods of switching" to --Switching-- and
 change "consumers" to --loads--.

On page 1, line 10, change "known. This has previously been done" to --conventionally performed--.

On page 1, line 11, change "help" to --use--.

On page 1, line 16, change "consumer" to --load,--.

On page 1, line 18, change "consumers" to --loads--.

On page 1, line 22, change "consumers" to --loads--.

On page 1, line 24, delete "known".

On page 1, line 29, change "consumer)" to --load)--.

On page 1, line 31, delete "here".

On page 2, after line 3, insert the following:

--German Published Patent Application No. 42 19 669 relates to a control unit for calculating control quantities for recurring control operations in a motor vehicle, including, in particular, engine management (ignition, injection) and the ABS brake system. The ignition module, the injection module and the brake module each include a microprocessor, a memory module and on/off circuits, and these modules continuously transmit the control quantities achieved over a connected databus to a central control unit. Any bus system suitable for data transmission in the motor vehicle may be used for this purpose.

European Published Patent Application No. 392,411 relates to an automotive controller having a central system manager module, which works together with load modules (air conditioner, power steering, transmission) over a bus. The system manager module, however, can be activated only when the user has identified himself correctly as the proper user. No special transmission protocol is provided.

German Published Patent Application No. 44 01 785 describes an integrated wiring system for a motor vehicle having a central control unit and a plurality of terminal control units that exchange data. This data exchange is not performed according to a standard protocol, but instead according to different communication protocols at different transmission rates.

European Published Patent Application No. 307,344 describes an automotive wiring system, in which user stations exchange data over a bus. Interface devices are connected to the user stations in a star network, with end devices (loads) connected in groups to the interface devices. There is no provision for combining them into load modules.

U.S. Patent No. 5,732,074 describes a mobile portable wireless communication system, in which data transfer occurs between a remote computer and an automotive controller according to the Internet protocol. Data is converted in the motor vehicle and sent to a local control network, which operates according to another bus system (CAN), not according to the Internet protocol.--.

On page 2, line 5, change "Explanation of the Invention" to
--SUMMARY OF THE INVENTION--.

On page 2, line 7, change the first instance of "the" to --it is one--.

On page 2, line 7, delete "is".

On page 2, line 8, change "consumers" to --loads--.

On page 2, line 12, change "This object is" to --The above and other beneficial objects of the present invention are--, change "with" to --by providing-- and delete "of the type defined".

On page 2, line 13, change "the preamble by the fact that" to --which--.

On page 2, line 14, change "consumers" to --loads--.

On page 2, line 15, change "consumer" to --load--.

On page 2, line 16, change "consumer" to --load--.

On page 2, line 18, delete "The".

On page 2, line 19, change "heart of the present invention is to connect an" to --An--.

On page 2, line 20, change "(consumer)" to --(load)-- and insert --is connected-- between "switched" and "to".

On page 2, line 25, after "protocol." insert the following:
--The central computer has a client-server relationship with each of the local computers. Data exchange occurs between the central computer and the local computers via the databus in accordance with the Internet protocol, and the networked computers define an intranet.--.

On page 2, line 27, change "essentially conceivable" to --possible--.

On page 2, line 28, change "consumer" to --load--.

On page 2, line 31, change "consumers" to --loads--.

On page 2, line 32, delete "it is advantageous".

On page 2, line 33, delete "preferred" and delete "if".

On page 2, line 34, change "consumers" to --loads-- and change "consumer" to --load--.

On page 2, line 35, change "is" to --may be--.

On page 2, line 36, delete "preferably".

On page 2, line 37, change "running" to --arranged--.

On page 3, line 1, change "consumer" to --load--.

On page 3, line 3, change "consumers" to --loads--.

On page 3, delete lines 5-17 and in their place insert:

--According to another preferred embodiment, the controller is especially simple and flexible if a server program, in particular a micro-server program, is installed in the local computers and a browser program is installed in the central computer for the purpose of data exchange. Such micro-servers, which need only a few kB of memory and thus can run on a small single-chip computer, have been available for some time and are marketed by the American company Spyglass, for example.--

On page 3, line 19, change "This yields the possibility of retrofitting" to --Thus, it is possible to retrofit--.

On page 3, line 23, delete "there is the possibility of designing" and change "CTU" to --CPU--.

On page 3, line 24, change "to" to --may-- and change "largely" to --designed substantially--.

On page 3, line 26, change "offers advantages" to --is advantageous-- and change "keeping" to --reducing--.

On page 3, line 27, change "manufacturer's" to --manufacturers--.

On page 3, delete lines 29 - 35.

On page 4, delete lines 1 - 19 and insert the following therefor:

--BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a schematic diagram of a first embodiment of a controller according to the present invention.

Figure 2 is a schematic diagram of a second embodiment of the controller according to the present invention.

Figure 3 is a flow chart of a control process in the control system that defines an intranet according to the present invention.

DETAILED DESCRIPTION--.

On page 4, line 21, delete "preferred".

On page 4, line 26, change "consumers" to --loads-- and change "consumer" to --load--.

On page 4, line 27, change "Consumer" to --Load--.

On page 4, line 28, change "consumer" to --load--.

On page 4, line 30, change "consumer" to --load--.

On page 5, line 19, change "(keyboard or the like)" to --(e.g., keyboard, etc.)--.

On page 5, line 24, delete "0".

On page 5, line 26, change "(consumer" to --(load--.

On page 5, line 28, change "conceivable" to --possible--.

On page 5, line 29, change “can” to --may--.

On page 5, line 30, delete “in any case”.

On page 5, line 31, change “consumer” to --load--.

On page 5, line 36, change “consumers” to --loads-- and change “consumer” to --load--.

On page 5, line 37, delete “in fact”.

On page 6, line 7, change “consumers” to --loads--.

On page 6, line 13, delete “it is”.

On page 6, line 14, delete “advantageous if according to” to --as illustrated in--.

On page 6, line 15, change “consumers” to --loads--.

On page 6, line 16, insert --,-- after “functionally” and change “consumer” to --load--.

On page 6, line 17, change “consumer” to --load--.

On page 6, line 19, change “consumer” to --load--.

On page 6, line 23, change “Consumer” to --Load--.

On page 6, line 24, change “consumers” to --loads--.

On page 6, line 25, change “Consumer” to --Load--.

On page 6, line 26, change “consumers” to --loads--.

On page 6, line 28, change “consumers” to --loads--.

On page 6, line 30, change “(consumers)” to --(loads)--.

On page 6, line 31, change “consumer” to --load--.

On page 6, line 33, delete “then”.

On page 6, line 37, insert --suitable-- between “any” and “method” and delete “desired”.

On page 7, line 4, change “consumer” to --load--.

On page 7, line 9, change “desired” to --corresponding-- and change “(consumer” to --(load--.

On page 7, line 13, change “desired” to --corresponding--.

On page 7, line 16, change “desired” to --corresponding--.

On page 7, line 23, change “This” to --The present--.

On page 7, line 23, change “yields on the whole” to --provides--.

On page 8, line 1, change “Claims” to --WHAT IS CLAIMED IS--.

IN THE ABSTRACT:

On line 1, change “Abstract” to --ABSTRACT--.

On line 3, change "In the case of a" to --A-- and delete "(10)".

On line 4, change "consumers (20, 23)" to --loads--, delete ",", after "vehicle" and insert --has-- between "vehicle" and "a".

On line 5, insert --.-- after "expandability" and delete "are achieved by the".

On line 6, change "fact that each" to --Each-- and change "consumer (20, 23)" to --load--.

On line 7, delete "(19, 22)", change "consumer" to --load-- and delete "(18, 21)".

On line 8, delete "(19, 22)".

On line 9, change "consumer" to --load-- and delete "(18, 21)".

On line 10, delete "(19, 22)" and delete "(11)".

On line 11, delete "(15)".

Delete line 14.

IN THE CLAIMS:

Please cancel, without prejudice, claims 1 - 7 in the underlying PCT application. Please also cancel, without prejudice, substitute claims 1 - 5 in the annex to the International Preliminary Examination Report.

Please add the following new claims:

--6. (New) A controller for a plurality of electric loads of a motor vehicle, comprising:

a central computer;

a databus; and

a plurality of local computers, each local computer corresponding to and configured to control a respective one of the electric loads, each local computer being connected to the central computer via the databus and being configured to exchange control data according to an Internet protocol via the databus;

wherein each electric load is arranged with the respective local computer in one of a plurality of load modules and is controlled by the respective local computer within the load module;

wherein the central computer is in a client-server relationship with each of the local computers; and

wherein the central computer and the local computers define an intranet.

7. (New) The controller according to claim 6, wherein one of the plurality of load modules includes a set of the electric loads, the set of the electric loads being controlled by one of the local computers.

8. (New) The controller according to claim 7, wherein the databus includes a plurality of bus lines arranged in a star network between the central computer and the load modules.

9. (New) The controller according to claim 6, wherein each local computer includes a server program for the data exchange and wherein the central computer includes a browser program.

10. (New) The controller according to claim 9, wherein the server program includes a micro-server program.

11. (New) The controller according to claim 9, further comprising a display device connected to the central computer, the display device being configured to display a home page of a respective one of the local computers selected for control.--.

REMARKS

This Preliminary Amendment cancels, without prejudice, claims 1 - 7 in the underlying PCT Application No. PCT/DE99/02221. This Preliminary Amendment also cancels, without prejudice, substitute claims 1 - 5 in the annex to the International Preliminary Examination Report in the underlying PCT Application No. PCT/DE99/02221 and adds new claims 6 - 11. The new claims, inter alia, conform the claims to U.S. Patent and Trademark Office rules and do not add any new matter to the application.

The above amendments to the specification and the abstract conform the same to U.S. Patent and Trademark Office rules and do not introduce any new matter into the application.

The underlying PCT Application No. PCT/DE99/02221 includes an International Search Report, dated November 26, 1999, a copy of which is included. The Search Report includes a list of documents that were considered by the Examiner in the underlying PCT application.

The underlying PCT Application No. PCT/DE99/02221 also includes an International Preliminary Examination Report, dated December 6, 2000. An English translation of the International Preliminary Examination Report and annex thereto is included herewith.

It is respectfully submitted that the subject matter of the present application is new, non-obvious and useful. Prompt consideration and allowance of the application are respectfully requested.

Respectfully submitted,

KENYON & KENYON

By: Richard L. Mayer (Reg. No. 41,172)

Dated: 1/22/01

By: Richard L. Mayer
Richard L. Mayer
Reg. No. 22,490

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CONTROLLER FOR A PLURALITY OF ELECTRIC LOADS
IN A MOTOR VEHICLE

Technical Field

5 The present invention relates to the field of automotive electronics or electrical systems. It relates to a controller for a plurality of electric loads in a motor vehicle.

Background Information

10 Methods of switching and/or controlling electric consumers in a motor vehicle are known. This has previously been done with the help of simple switches (example: light on/off), pushbuttons (example: power windows or electrically adjustable side mirrors) or actuators (example: instrument lighting) in an electric circuit. The actuators are usually designed as
15 analog devices. They are also designed specifically for a given process or consumer and they are arranged in a decentralized location. This also has the disadvantage that in the case of a plurality of electric consumers, such as those in the case of modern vehicles, there must also be a plurality
20 of power supply lines with plug connectors leading from the switches, pushbuttons and actuators to the individual consumers.

25 In addition, there have also been known attempts to use a computer to control some of the electric equipment of the motor vehicle. The computer is arranged centrally and is designed in part specifically for the control functions. It generates the control pulses for the electric component (the electric consumer). At the same time, the computer also
30 performs certain "infotainment" functions, such as navigation, radio or telematics. One problem here is optimizing the operating system to perform both infotainment as well as

control functions. However, retrofitting and scalability of functions from the control area are problematical if hardware changes must be made in the PC.

5 Explanation of the Invention

Therefore, the object of the present invention is to provide a controller for the electric consumers in a motor vehicle which has a simple design, can be adapted flexibly to a wide variety
10 of control functions and is easily scalable and expandable.

This object is achieved with a controller of the type defined in the preamble by the fact that each of the electric
15 consumers is arranged together with a local computer in a consumer module and is controlled by the respective local computer within the consumer module, and the local computers are connected to a central computer over a databus and exchange control data according to a standard protocol. The heart of the present invention is to connect an electric
20 component (consumer) which is to be controlled or switched to a local computer, e.g., in the form of a single-chip computer which contains or controls the control electronics. The component to be controlled (switched) can then be controlled easily by the central computer over the databus and by the
25 local computers according to a standard protocol.

It is essentially conceivable to assign a separate local computer to each individual electric consumer. However, this means a relatively great expense for bus lines and local
30 computers. Since there is a growing trend today toward combining multiple electric consumers of related types or functions in prewired modules, it is advantageous according to a first preferred embodiment of the present invention if multiple electric consumers are combined within a consumer
35 module and controlled by a local computer. The databus is preferably designed to include a plurality of bus lines running in a star-shaped pattern between the central computer

and the individual consumer modules, thus permitting easy assembly and easy expandability to add new modules or consumers.

5 According to another preferred embodiment, the controller is especially simple and flexible if the central computer has a client-server relationship with each of the local computers, and if data exchange takes place between the central computer and the local computers over the databus according to the
10 Internet protocol, and if the networked computers form an intranet, and for the purpose of data exchange, if a server program, in particular a micro-server program, is installed in the local computers and a browser program is installed in the central computer. Such micro-servers which need only a few kB
15 of memory and thus can run on a small single-chip computer have been available for some time and are marketed by the American company Spyglass, for example.

This yields the possibility of retrofitting a motor vehicle
20 with power windows, for example, without causing the central computer to be underdimensioned as a result.

In addition, there is the possibility of designing the CTU and the memory equipment of the central computer to be largely
25 independent of the electric equipment of the motor vehicle, which offers advantages in keeping inventories of spare parts at the automotive manufacturer's.

Additional embodiments are derived from the dependent claims.
30

Brief Description of Figures

The present invention is explained in greater detail below on
35 the basis of embodiments in conjunction with the drawing.

Figure 1 shows a block diagram of a first preferred embodiment of a controller according to the present invention, where a separate local computer is assigned to each electric consumer, and the central computer and the local computers are connected to a common databus;

Figure 2 shows a block diagram of a second preferred embodiment of a controller according to the present invention, where a separate local computer is assigned to groups of electric consumers, and the central computer and the local computers exchange control data over a star-shaped databus, and

Figure 3 shows a flow chart of a control process in the control system designed as an intranet according to the present invention.

Methods of Implementing the Invention

Figure 1 shows a first preferred embodiment of an automotive controller according to the present invention. In controller 10, a central computer 11 located in or near the dashboard, for example, exchanges control data via a common data bus 15 with individual local computers 19 and 22, each being assigned to consumers 20 or 23 within a consumer module 18 or 21. Consumer module 18 may be, for example, a power window module, and consumer module 21 may be a seat adjuster. Computers 11, 19 and 22 are each connected to databus 15 by connecting lines 14, 16 and 17. Both central computer 11 and consumer modules 18, 21 are supplied separately with battery power VB. An Internet browser is run as an application program on central computer 11. A micro-server is run as the application program on local computers 19, 22. Each of the three units 11, 18, 21 has its own Internet address, e.g., "auto-pc.my-auto.car" or "powerwindow1.my-auto.car" and "seat1.my-auto.car."

Figure 3 shows a schematic diagram of the control sequence, where:

A = start browser

B = server query

5 C = server searches for previous home page

D = browser shows previous status

E = input of new status

F = browser sends setpoint status

G = server gives command to controller

10 H = server sends new home page

I = browser shows new status

To control the power windows, by analogy with the self-explanatory diagram in Figure 3, the web client is started on the central computer ("auto PC") and the homepage of the power window (web server on local computer 19) is called up, for example. This presents the status and permits changes to be made. This can be done, for example, by using an input device (keyboard or the like) 12 connected to central computer 11. Example: status displayed: "window open." Action: closing the window partially with a "soft" linear regulator or completely with a "soft" pushbutton (the soft elements are operating elements produced and displayed by the software). Final status displayed: "window (partially) closed"0.

25 In the case of the electrically adjustable seat (consumer module 21), comfort features such as a personal adjustment profile are also conceivable and may be provided. These features can be controlled, called up and programmed over central computer 11 in any case. However, it is also possible to store the data for this in consumer module (seat module) 21 itself as well as in central computer 11.

35 If a display device 13 (e.g., a large-area LCD display) is connected to central computer 11, as shown in Figure 1, the home pages of the individual consumers or consumer modules may in fact be represented graphically. However, this is not

essential for the functioning of the controller according to the present invention. Instead, the type of communication using a common (Internet) protocol and the allocation of the computer intelligence to central computer 11 as the client and local computers 19, 22 as servers is important.

Essentially, the electric consumers may all be designed individually as intelligent modules with a server function. However, it has become increasingly a standard practice in the automotive industry to assemble a vehicle from individual modules that have been completely assembled and prewired in advance by subcontractors, e.g., the front section with the headlight/turn signal combinations. In this regard, it is advantageous if according to Figure 2, individual electric consumers 31, 32 and/or 35 and/or 38, 39 which belong together functionally are combined into prewired consumer modules 29 and/or 33 and/or 36 and controlled within the consumer module by a single local computer 30 or 34 or 37 as the local intelligence. Intelligent consumer modules 29, 33, 36 are connected over star-shaped bus lines 26, 27, 28 to a central computer 25 which controls as a client the local computers/servers 30, 34, 37 according to the Internet protocol. Consumer modules 29 and 36 may be seat modules, for example, each with two motors as electric consumers 31, 32 or 39, 39. Consumer module 33 may be, for example, a front module with six electric consumers 35, each composed of two lamps, two turn indicators and two headlight height adjustments (three consumers each on the right and left).

Electric components (consumers) 31, 32 and/or 35 and/or 38, 39 are prewired in consumer modules 29, 33, 36. A local computer 30 or 34 or 37 is included and wired as the module intelligence in each module. No plugs are then needed. To the outside, each module has two connections, namely an electric connection to the power supply and a bus line 26 or 27 or 28. The electric connection is connected to the battery power VB by any method desired. The bus line (bus connection) is a

cable, optionally long and with an optional plug. Central computer 25 is arranged on the dashboard. On the rear side it has a number of bushings (not shown) into which bus cables 26, 27, 28 from consumer modules 29, 33, 36 are inserted.

5

To adjust a seat, a command is sent from the central computer (e.g., in the manner described above, see Figure 3) over operating elements on the dashboard to seat module 29 where the local computer then controls the desired motor (consumer 10 31 or 32). Likewise, to adjust a headlight from central computer 25 over operating elements on the dashboard, a command is sent to headlight module 33, where local computer 34 controls the desired motor. To turn on a headlight, a command is sent from central computer 25 over operating 15 elements on the dashboard to headlight module (front module) 33 where local computer 34 turns on the desired headlight.

15

20

Since central computer 25 is not under any special load due to the switching operations, it is expedient to use for this a computer that is already present in the dashboard for other purposes (e.g., infotainment).

25

This invention yields on the whole an automotive controller which has a simple design, is expandable and flexible to use and can be implemented with standardized hardware and software components.

Claims

1. A controller (10, 24) for a plurality of electric loads (20, 23; 31, 32, 35, 38, 39) of a motor vehicle, characterized in that each electric consumer (20, 23; 31, 32, 35, 38, 39) is arranged together with a local computer (19, 22; 30, 34, 47) in a consumer module (18, 21; 29, 33, 36) and is controlled by the respective local computer (19, 22; 30, 34, 47) within the consumer module (18, 21; 29, 33, 36), and the local computers (19, 22; 30, 34, 47) are connected to a central computer (11, 25) via a databus (15; 26, 27, 28) and exchange control data according to a standard protocol.

2. The controller according to Claim 1, characterized in that several electric consumers (31, 32, 35, 38, 39) are combined within one consumer module (29, 33, 36) and are controlled by one local computer (30, 34, 37).

3. The controller according to Claim 2, characterized in that the databus includes a plurality of bus lines (26, 27, 28) running in a star-shaped pattern between the central computer (25) and the individual consumer modules (29, 33, 36).

4. The controller according to one of Claims 1 through 3, characterized in that the central computer (11, 25) has a client-server relationship with each local computer.

5. The controller according to Claim 4, characterized in that the data exchange between the central computer (11, 25) and the local computers (19, 22; 30, 34, 37) takes place over the databus (15; 26, 27, 28) according to the Internet protocol,

and the networked computers (11, 25; 19, 22; 30, 34, 37) form an intranet.

6. The controller according to Claim 5, characterized in that in each case a server program, in particular a micro-server program, is installed in the local computers (19, 22; 30, 34, 37), and a browser program is installed in the central computer (11, 25).

7. The controller according to Claim 6, characterized in that a display device (13) is connected to the central computer (11) in such a way that the home page of the respective local computer (19, 22; 30, 34, 37) selected for control is displayed on the display device (13).

[illegible]

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Fig. 1

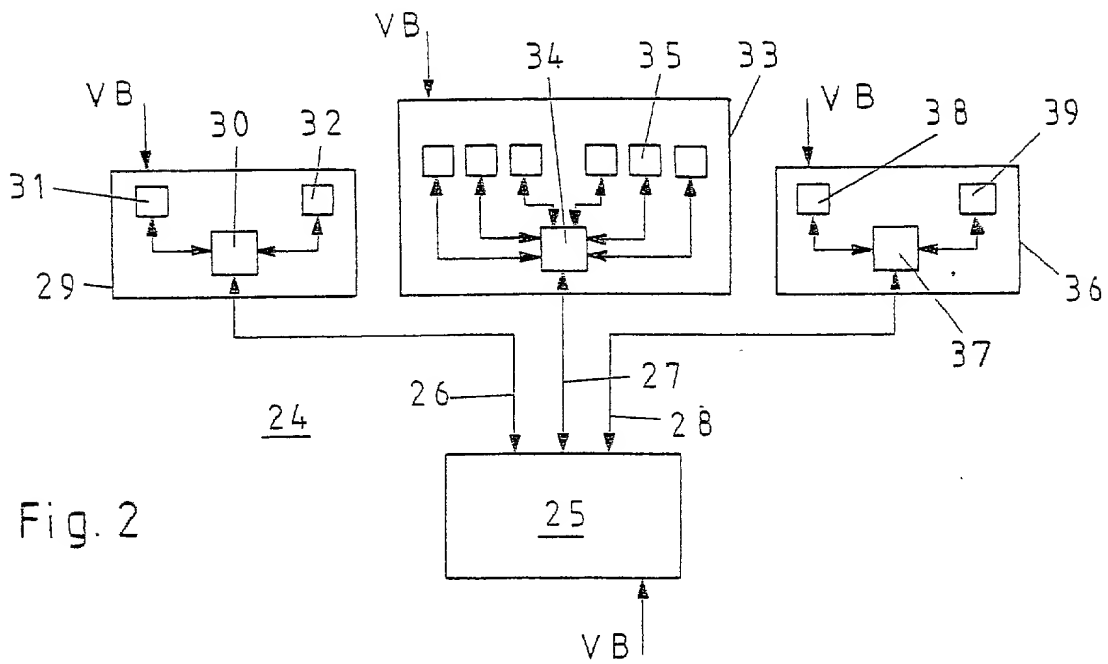
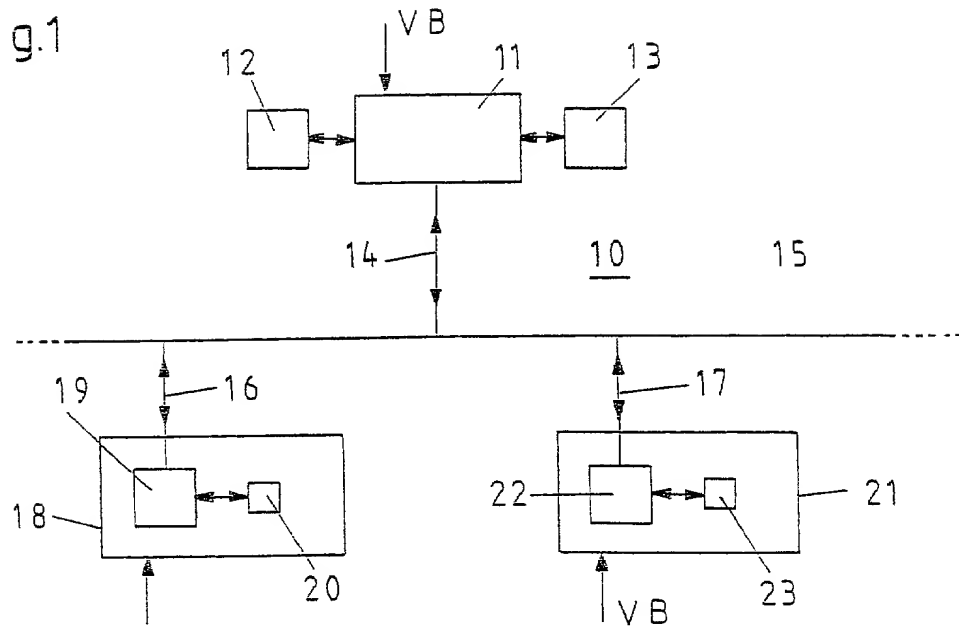
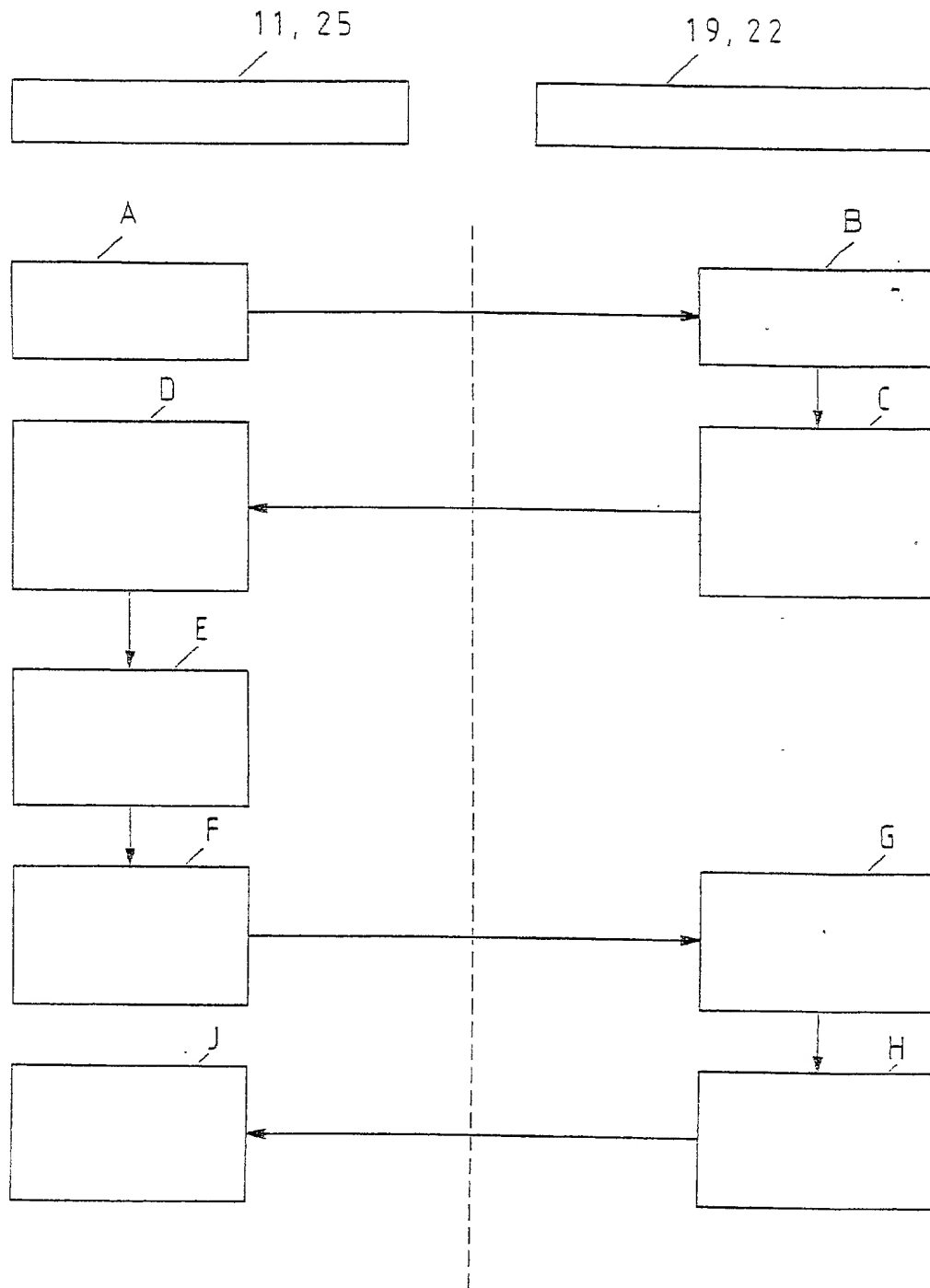


Fig. 2

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Fig.3



**COMBINED DECLARATION AND
POWER OF ATTORNEY FOR PATENT APPLICATION**

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below adjacent to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled **CONTROLLER FOR A PLURALITY OF ELECTRIC LOADS IN A MOTOR VEHICLE**, and the specification of which:

- ☐ is attached hereto;
- ☐ was filed as United States Application Serial No. _____ on _____, 19__ and was amended by the Preliminary Amendment filed on _____, 19__.
- ☒ was filed as PCT International Application Number PCT/DE99/02221 on the 22nd day of July 1999.
- ☒ an English translation of which is filed herewith.

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1.56(a). I hereby claim foreign priority benefits under Title 35, United States Code § 119 of any foreign application(s) for patent or inventor's certificate or of any PCT international applications(s) designating at least one country other than the United States of America listed below and have also identified below any foreign application(s) for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date before that of the application(s) of which priority is claimed:

EL302704014

~~EL302702937~~

**PRIOR FOREIGN/PCT APPLICATION(S)
AND ANY PRIORITY CLAIMS UNDER 35 U.S.C. § 119**

Country: Federal Republic of Germany

Application No. 198 32 531.2

Date of Filing: July 22, 1998

Priority Claimed

Under 35 U.S.C. § 119: ☒ Yes ☐ No

I hereby claim the benefit under Title 35, United States Code § 120 of any United States Application or PCT International Application designating the United States of America that is/are listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in that/those prior application(s) in the manner provided by the first paragraph of Title 35, United States Code § 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations § 1.56(a) which occurred between the filing date of the prior application(s) and the national or PCT international filing date of this application:

**PRIOR U.S. APPLICATIONS OR
PCT INTERNATIONAL APPLICATIONS
DESIGNATING THE U.S. FOR BENEFIT UNDER 35 U.S.C. § 120**

U.S. APPLICATIONS

Number :

Filing Date :

**PCT APPLICATIONS
DESIGNATING THE U.S.**

PCT Number :

PCT Filing Date :

I hereby appoint the following attorney(s) and/or agents to prosecute the above-identified application and transact all business in the Patent and Trademark Office connected therewith.

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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment or both under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

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Author	Year	Country	Sample Size	Study Design	Findings
Wang et al.	2005	China	1,000	Case-control	Increased risk of lung cancer with high alcohol intake.
Li et al.	2006	China	1,200	Case-control	Alcohol consumption associated with increased risk of liver cancer.
Zhang et al.	2007	China	1,500	Case-control	Alcohol intake linked to increased risk of stomach cancer.
Chen et al.	2008	China	1,800	Case-control	Alcohol consumption associated with increased risk of esophageal cancer.
Qin et al.	2009	China	2,000	Case-control	Alcohol intake linked to increased risk of colorectal cancer.
Wu et al.	2010	China	2,200	Case-control	Alcohol consumption associated with increased risk of pancreatic cancer.
Xu et al.	2011	China	2,500	Case-control	Alcohol intake linked to increased risk of bladder cancer.
Yang et al.	2012	China	2,800	Case-control	Alcohol consumption associated with increased risk of prostate cancer.
Guo et al.	2013	China	3,000	Case-control	Alcohol intake linked to increased risk of breast cancer.
Hou et al.	2014	China	3,200	Case-control	Alcohol consumption associated with increased risk of ovarian cancer.
Li et al.	2015	China	3,500	Case-control	Alcohol intake linked to increased risk of uterine cancer.
Wang et al.	2016	China	3,800	Case-control	Alcohol consumption associated with increased risk of cervical cancer.
Zhang et al.	2017	China	4,000	Case-control	Alcohol intake linked to increased risk of vaginal cancer.
Chen et al.	2018	China	4,200	Case-control	Alcohol consumption associated with increased risk of penile cancer.
Qin et al.	2019	China	4,500	Case-control	Alcohol intake linked to increased risk of testicular cancer.
Wu et al.	2020	China	4,800	Case-control	Alcohol consumption associated with increased risk of thyroid cancer.
Xu et al.	2021	China	5,000	Case-control	Alcohol intake linked to increased risk of parathyroid cancer.
Yang et al.	2022	China	5,200	Case-control	Alcohol consumption associated with increased risk of adrenal cancer.
Guo et al.	2023	China	5,500	Case-control	Alcohol intake linked to increased risk of pituitary cancer.
Hou et al.	2024	China	5,800	Case-control	Alcohol consumption associated with increased risk of pineal cancer.
Li et al.	2025	China	6,000	Case-control	Alcohol intake linked to increased risk of hypothalamic cancer.

2 - 00 Full name of inventor Jens KIRCHER

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